

WHAT IS CLAIMED IS:

1. An avalanche photodiode comprising:
an absorption layer absorbing light to create carriers; and
a multiplication layer multiplying the created carriers,
wherein

the multiplication layer is formed of Si and the absorption layer is formed of a compound semiconductor, and wherein

a semiconductor interface layer having a wider band-gap than that of the absorption layer is formed between the multiplication layer and the absorption layer.

2. An avalanche photodiode according to claim 1, wherein the absorption layer is formed of an InGaAs mixed crystal or InGaAlAs mixed crystal or InGaAsP mixed crystal, and the semiconductor interface layer is formed of the InGaAlAs mixed crystal or InGaAsP mixed crystal.

3. An avalanche photodiode according to claim 1, wherein the absorption layer is formed of an InGaAs mixed crystal or InGaAlAs mixed crystal or InGaAsP mixed crystal, and the semiconductor interface layer is formed of InP or GaAs.

4. An avalanche photodiode according to claim 1, wherein the absorption layer is formed of a semiconductor containing Sb.

5. An avalanche photodiode according to claim 1, wherein a junction between the multiplication layer and the semiconductor interface layer is formed by a fusion.

6. An optical module mounting an avalanche photodiode, said avalanche photodiode comprises:

an absorption layer absorbing light to create carriers; and

a multiplication layer multiplying the created carriers,
wherein

the multiplication layer is formed of Si and the absorption layer is formed of a compound semiconductor, and wherein

a semiconductor interface layer having a wider band-gap than that of the absorption layer is formed between the multiplication layer and the absorption layer.

7. An optical receiver mounting an avalanche photodiode, said avalanche photodiode comprises:

an absorption layer absorbing light to create carriers; and

a multiplication layer multiplying the created carriers,
wherein

the multiplication layer is formed of Si and the absorption layer is formed of a compound semiconductor, and wherein

a semiconductor interface layer having a

wider band-gap than that of the absorption layer is formed between the multiplication layer and the absorption layer.